METALS AND NON METALS
For Class Practice

Case Based Study Questions

Read the following paragraph & answer the following questions 1 to 3.

On the basis of reactivity of different metals with oxygen, water and acids as well as displacement reactions, the metals have been arranged in the decreasing order of their reactivities. This arrangement is known as activity series or reactivity series of metals.

The basis of reactivity is the tendency of metals to lose electrons. If a metal can lose electrons easily to form positive ions, it will react readily with other substances. Therefore, it will be a reactive metal. On the other hand, if a meal loses electrons less rapidly to form a positive ion, it will react slowly with other substances. Therefore, such a metal will be less reactive.

1. Which of the following metals is less reactive than hydrogen?
   (A) Copper (B) Zinc (C) Magnesium (D) Lead

2. Which of the following is the correct arrangement of the given metals in descending order of their reactivity?
   Zinc, Iron, Magnesium, Sodium
   (A) Zinc > Iron > Magnesium > Sodium (B) Sodium > Magnesium > Iron > Zinc
   (C) Sodium > Zinc > Magnesium > Iron (D) Sodium > Magnesium > Zinc > Iron

3. Which of the following pairs will give displacement reactions?
   (A) $FeSO_4$ solution and Copper metal (B) $AgNO_3$ solution and Copper metal
   (C) $CuSO_4$ solution and Silver metal (D) NaCl solution and Copper metal

Read the following paragraph & answer the following questions 4 to 6.

Metals are characterized by high melting point & boiling point, ductility, malleability, lustre & high tensile strength while non-metals have low melting point & boiling point, non-ductile, non- malleable & low tensile strength. Due to their own specific properties metals & non- metals have wide range of application.

4. Aluminium is used for making cooking utensils. Which of the following properties of aluminium are responsible for the same?
   i. Good thermal conductivity
   ii. Good electrical conductivity
   iii. Ductility
   iv. High melting point
   (A) (i) and (ii) (B) (i) and (iii) (C) (ii) and (iii) (D) (i) and (iv)

5. Among the following select the one which is having least melting point.
   (A) Sodium (B) Lead (C) Mercury (D) Gallium

6. Choose the most ductile metal from the following-
   (A) Na (B) Au (C) Cu (D) W

Read the following paragraph & answer the following questions 7 to 10.

Metals reacts react with water acids & only a few metals also react with alkalis also while non-metal do not react with any of them at ordinary conditions. Generally bonding between metal & non-metal is ionic bonding & between non-metal & non-metal is covalent bonding. Properties of ionic compounds are different than the covalent compounds.

7. A covalent bond involves a __________ of electrons.
(A) sharing (B) borrowing (C) exchanging (D) switching

8. Which of the following is covalent compound?
(A) $CuCl_2$ (B) KI (C) NaCl (D) Al_2O_3

9. Which two elements could form an ionic compound?
(A) carbon and oxygen (B) hydrogen and nitrogen
(C) lithium and fluorine (D) boron and neon

10. Properties of ionic compounds includes-
(A) high m.p. & b.p. (B) low m.p. & b.p.
(C) brittleness (D) both (a) (c)

Assertion & Reason Questions

Directions (Q. Nos. 1-10) *In the following questions a statement of Assertion is followed by a statement of Reason. Mark the correct choice as*-

(A) Both Assertion and Reason are true and Reason is the correct explanation of Assertion.
(B) Both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
(C) Assertion is true but Reason is false.
(D) Reason is true but Assertion is false.

1. **Assertion:** Elements Pt, Ag, noble gases, etc. occur in native state in nature.
Reason: Elements which are attacked by moisture, oxygen and CO_2 of air occur in native state.

2. **Assertion:** Bauxite is the most important ore of Aluminium.
Reason: Carbon is used to reduce bauxite to aluminium.

3. **Assertion:** Brass is an alloy of Zinc and Magnesium.
Reason: Alloys are homogenous mixture of two or more metals or some non-metals.

4. **Assertion:** Aluminium oxide and zinc oxide are amphoteric in nature.
Reason: Amphoteric nature means that substance have both acidic and basic character

5. **Assertion:** Anodising is a method to prevent metal from corrosion.
Reason: Anodising is a process of coating aluminium with a layer of aluminium oxide.

6. **Assertion:** Zinc carbonate is heated strongly in presence of air to form zinc oxide and carbon dioxide.
Reason: Calcination of zinc carbonate is carried out to obtain zinc oxide.

7. **Assertion:** MgCl, is a covalent compound.
Reason: MgCl, is a good conductor of electricity in molten state.

8. **Assertion:** Electrovalency of Na is +1.
Reason: The number of electrons which an atom either loses or gains in the formation of an ionic bond is known as its valency.

9. **Assertion:** Metals generally act as reducing agents.
Reason: The reducing character is expressed in terms of electron releasing tendency.

10. **Assertion:** Bromine cannot displace chlorine from its salt solution.
Reason: Chlorine is more reactive than bromine.